2SK2122

Silicon N-Channel Power F-MOS

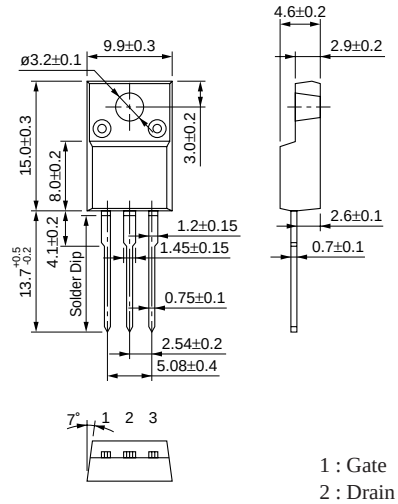
■ Features

- Avalanche energy capability guaranteed : EAS > 3.2mJ
- High-speed switching : t_f= 50ns
- No secondary breakdown

■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

Unit : mm



1 : Gate
2 : Drain
3 : Source
TO-220E Package

■ Absolute Maximum Ratings (Tc = 25˚C)

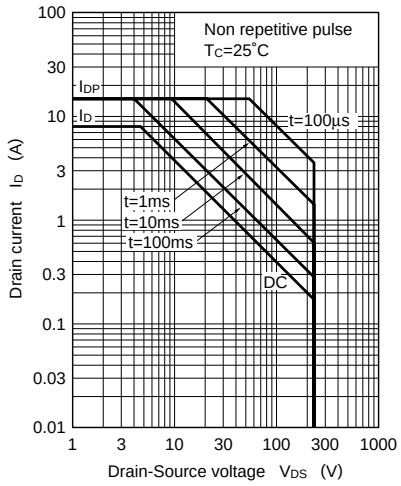
Parameter		Symbol	Rating	Unit
Drain-Source breakdown voltage		V_{DSS}	250	V
Gate-Source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	±8	A
	Pulse	I_{DP}	±16	A
Avalanche energy capability		EAS *	3.2	mJ
Allowable power dissipation	T_C=25˚C	P_D	40	W
	Ta=25˚C		2	
Channel temperature		T_{ch}	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

* L= 0.1mH, I_L= 8A, V_{DD}= 50V, 1 pulse

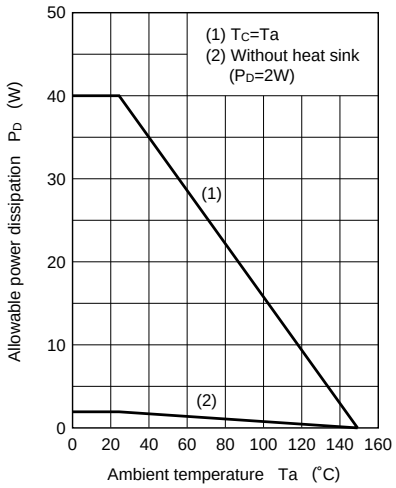
■ Electrical Characteristics (Tc = 25˚C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I_{DSS}	V_{DS}= 200V, V_{GS}= 0			0.1	mA
Gate-Source leakage current	I_{GSS}	V_{GS}= ±20V, V_{DS}= 0			±1	μ A
Drain-Source breakdown voltage	V_{DSS}	I_D=1mA, V_{GS}= 0	250			V
Gate threshold voltage	V_{th}	V_{DS}=10V, I_D=1mA	2		5	V
Drain-Source ON-resistance	$R_{DS(on)}$	V_{GS}=10V, I_D= 5A		0.4	0.6	Ω
Forward transadmittance	$\|Y_{fs}\|$	V_{DS}=10V, I_D= 5A	2.7	4.7		S
Diode forward voltage	V_{DSF}	I_{DR}= 8A, V_{GS}= 0			–1.7	V
Input capacitance	C_{iss}	V_{DS}=10V, V_{GS}= 0, f=1MHz		1100		pF
Output capacitance	C_{oss}			200		pF
Feedback capacitance	C_{rss}			60		pF
Turn-on time (delay time)	$t_{d(on)}$	V_{GS}=10V, I_D= 5A V_{DD}=100V, R_L= 20Ω		20		ns
Rise time	t_r			20		ns
Fall time	t_f			30		ns
Turn-off time (delay time)	$t_{d(off)}$			130		ns
Channel-Case heat resistance	$R_{th(ch-c)}$				3.125	˚C/W

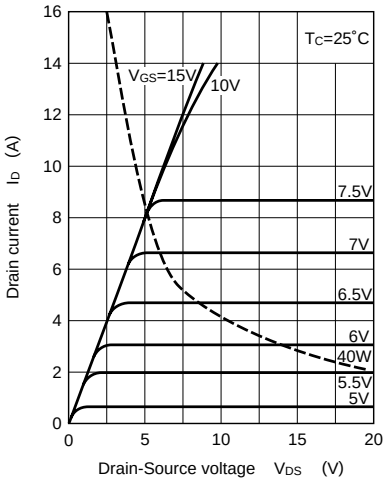
Area of safe operation (ASO)



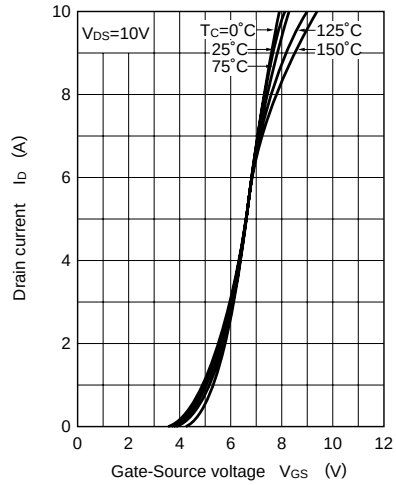
$P_D - Ta$



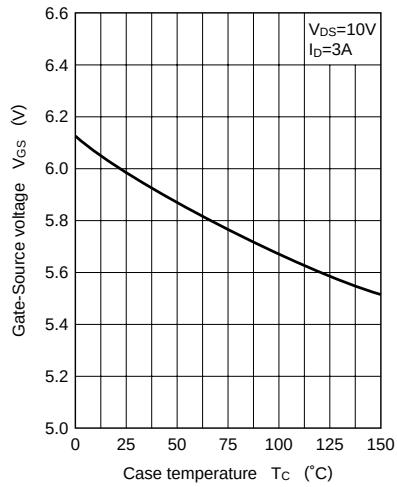
$I_D - V_{DS}$



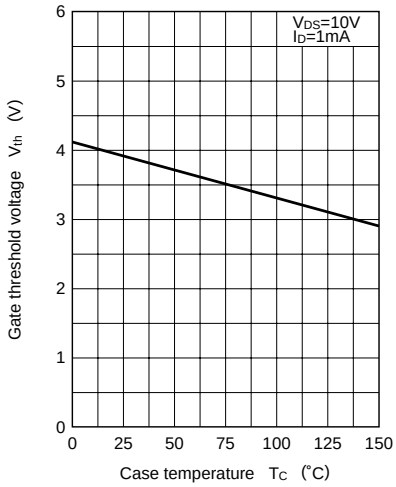
$I_D - V_{DS}$



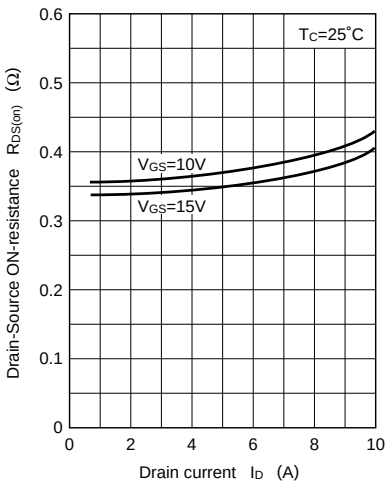
$V_{GS} - T_C$



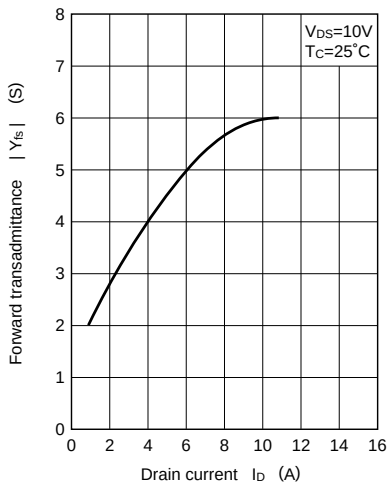
$V_{th} - T_C$



$R_{DS(on)} - I_D$



$|Y_{fs}| - I_D$



$C_{iss}, C_{oss}, C_{rss} - V_{DS}$